

WHAT IS CLAIMED:

1. A formulation for application to a mucosal tissue selected from the group consisting of nasal, ophthalmic, oral cavity, gastrointestinal, respiratory, vaginal and rectal, the formulation comprising:

- (a) a biologically active agent selected from the group consisting of antibiotic, antiviral agent, antifungal agent, disinfectant, nutrient, anti-inflammatory agent, local anesthetic and essential oil; and
- (b) a lipid carrier, said lipid carrier including at least one lipid selected from the group of amphiphilic phospholipids consisting of yolk lecithin, Soya lecithin, phosphatidylglycerol and analogs thereof, said lipid being characterized as a colloidal micellar dispersion or as an emulsion of lipid droplets dispersed in an aqueous medium, and said lipid and said agent being present in a ratio of from about 10:1 to about 1:10, such that said agent is carried by said lipid of said lipid carrier and said agent is released from said lipid in a sustained manner and over a prolonged period of time when compared to the same formulation without said at least one lipid, and such that said lipid carrier has a property of high adhesion to the mucosal tissue.

2. The formulation of claim 1, wherein said antibiotic is selected from the group consisting of erythromycin, tetracycline, and chloramphenicol.

3. The formulation of claim 1, wherein said antiviral agent is selected from the group consisting of azothymidin, acyclovir, dideoxyuridine and amantadine.

4. The formulation of claim 1, wherein said antifungal agent is selected from the group consisting of ketoconazole, fluconazole, miconazole, tolnaftate, amphotericin and nystatin.

007240" 8602560

Sub
AB

5. The formulation of claim 1, wherein said disinfectant is selected from the group consisting of chlorhexidine and salts thereof, triclosan, cetrimide and cetylpyridinium chloride.

6. The formulation of claim 1, wherein said nutrient is selected from the group consisting of vitamin A, vitamin E, vitamin D, vitamin K, ascorbyl palmitate, coenzyme Q-10, coenzyme Q-50, lipoic, biotin and carnitine.

7. The formulation of claim 1, wherein said anti-inflammatory agent is selected from the group consisting of non-steroidal and steroidal.

8. The formulation of claim 7, wherein said non-steroidal anti-inflammatory agent is selected from the group consisting of indomethacin, ketoprofen, diclofenol and acetylsalicylic acid.

9. The formulation of claim 7, wherein said steroidal anti-inflammatory agent is selected from the group consisting of dexamethazone, prednisolone and fluoromethzalone acetoneide.

10. The formulation of claim 1, wherein said local anesthetic is selected from the group consisting of lidocaine, trimecaine and benzocaine.

11. The formulation of claim 1, wherein said essential oil is selected from the group consisting of menthol, vanillin, peppermint oil, clove oil, eucalyptus oil and lavender oil.

Sub
AB

12. The formulation of claim 1, wherein said agent is further characterized by having activity in the oral cavity for treatment of at least one condition selected from the group consisting of gum disease, caries, dry mouth, malodorous breath, and microbial infection.

13. The formulation of claim 12, wherein said microbial infection includes an infection selected from the group consisting of bacterial, viral and fungal.

14. The formulation of claim 1, wherein said agent is further characterized by having activity on a tissue selected from the group consisting of nasal, ophthalmic, vaginal and rectal, said activity being suitable for treatment of

007240-8602560

at least one condition selected from the group consisting of inflammation, irritation, dryness and microbial infection.

15. The formulation of claim 14, wherein said microbial infection includes an infection selected from the group consisting of bacterial, viral and fungal.

16. The formulation of claim 1, wherein said lipid and said agent are present in a ratio of from about 5:1 to about 1:5.

17. The formulation of claim 16, wherein said lipid and said agent are present in a ratio of from about 3:1 to about 1:3.

18. The formulation of claim 1, further comprising a stabilizer, said stabilizer including at least one surfactant selected from the group consisting of non-ionic, anionic, cationic and amphiphilic.

19. The formulation of claim 18, wherein said stabilizer is non-ionic surfactant selected from the group consisting of a polyethylene glycol derivatives and glycerol derivatives.

20. The formulation of claim 19, wherein said polyethylene glycol derivative is selected from the group consisting of Tweens, tritons, tyloxapol, pluronics, Brijes, Spans, poloxamers and emulphors.

21. The formulation of claim 19, wherein said glycerol derivative is selected from the group consisting of polyglycerines and polyalkylglycerides.

22. The formulation of claim 18, wherein said stabilizer is an anionic surfactant selected from the group consisting of carboxylates, alkyl and aryl sulphonates and phosphates.

23. The formulation of claim 18, wherein said stabilizer is a cationic surfactant selected from the group consisting of alkyl pyridinium salt and tetra-alkylammonium salt.

24. The formulation of claim 18, wherein said stabilizer is an amphiphilic surfactant selected from the group consisting of alkyl betaine

007240-8604560

derivatives, cocoamphodiacetale derivatives, lauroamphoacetates and phosphatidylglycerol.

25. The formulation of claim 1, further comprising at least one lipid additive selected from the group consisting of triglycerides, alkyl esters, cholesterol, triolein, edible oils, medium chain glycerates, isopropylmyristate and cholesterol esters.

26. The formulation of claim 1, further comprising at least one additive selected from the group consisting of flavors, aroma modifiers, sweeteners, colors, and antioxidants.

27. The formulation of claim 1, wherein said lipid is in a colloidal dispersion of a form selected from the group consisting of micelles, mixed micelles and micellar aggregates, said lipid having a particle size of from about 10 to about 300 nm.

28. The formulation of claim 1, wherein said lipid is in the form of an dispersion having lipid particles of size in the range of from about 50 to about 500 nm.

29. A method of administering a formulation to a mucosal tissue selected from the group consisting of nasal, ophthalmic, oral cavity, gastrointestinal, respiratory, vaginal and rectal, comprising the steps of:

- (a) providing the formulation, the formulation featuring:
 - (i) a biologically active agent selected from the group consisting of antibiotic, antiviral agent, antifungal agent, disinfectant, nutrient, anti-inflammatory agent, local anesthetic and essential oil; and
 - (ii) a lipid carrier, said lipid carrier including at least one lipid selected from the group of amphiphilic phospholipids consisting of yolk lecithin, Soya lecithin, phosphatidylglycerol and analogs thereof, said lipid being characterized as a colloidal micellar dispersion or as an

001240-8602560

emulsion of lipid droplets dispersed in an aqueous medium, and said lipid and said agent being present in a ratio of from about 10:1 to about 1:10, such that said agent is carried by said lipid of said lipid carrier and said agent is released from said lipid in a sustained manner and over a prolonged period of time when compared to the same formulation without said at least one lipid, and such that said lipid carrier has a property of high adhesion to the mucosal tissue; and

(b) administering the formulation to the mucosal tissue.

30. The method of claim 29, wherein the mucosal tissue is the oral cavity and the formulation is administered as a mouthwash.

001240-8607560